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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/921,323	08/02/2001	Jay Darrell Gillespie	34423/237429	5051

826 7590 05/22/2008

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ART UNIT	PAPER NUMBER
1794	

MAIL DATE	DELIVERY MODE
05/22/2008	PAPER

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/921,323
Filing Date: August 02, 2001
Appellant(s): GILLESPIE ET AL.

Raymond O. Linder, Jr.
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 3/4/2008 appealing from the Office action mailed 11/5/2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,162,074	Hills	11-1992
5,814,349	Geus et al.	9-1998
6,410,138	Mleziva et al.	6-2002
Handbook of Fiber Chemistry 3rd Edition; Taylor and Francis; copyright 2006; Chapter 3.6, 3.7		

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. **Claim 1-10, 29 and 30 rejected under 35 U.S.C. 103(a) as being obvious over Hills (US 5162074) in view of Geus et al. (US 5,814,349) and in further view of Mleziva (US 6,410,138) and Handbook of Fiber Chemistry, 3rd edition.** Hills teaches an apparatus for making multi-component yarns and bicomponent fibers. Hills teaches distributing each separate component to an array of inlet holes for multiple spinneret orifices (claim 1). Hills teaches a spin pack assembly where the assembly includes plates, sandwiched together from top to bottom in the following sequence; a top plate a screen support plate a metering plate an etched distributor plat and a spinneret plate. (col 8, lines 60-68; col. 9 lines 1-5). Hills teaches a spinneret orifice array with varying densities of 4000 in 24 inches (col. 11, lines 15-22), 1768 orifices in a 3.5 inch x 21 inch plate which is equivalent to 6298 orifices/ sq. meter (col. 20, lines 7-25). Hills teaches a distribution plate with distribution flow passages formed by etching (col. 12, lines 27-30). Hills teaches quench air that contacts the filaments by flowing transversely across fibers (col. 23, lines 28-50).

Hills differs from the current application and does not teach an attenuator and Hills does not teach depositing the fibers on a continuous air-permeable web and applying suction beneath the air permeable belt to draw air through the belt. Hills does not teach bonding the filaments. Hills teaches polypropylene as a sheath and core and teaches melt flow index differentials of 8 and melt temperature differentials of 3 °C (Table I) but does not teach utilizing a reclaim polypropylene as one polymer components.

Geus teaches an apparatus for the continuous production of a spun bond web. Geus teaches stretching the filament and depositing the filaments on a perforated sieve belt, also referred to an air-permeable belt, (col. 3, lines 35-42) with a suction blower below the belt that is independently controlled (col 2, lines 55-58).

Mleziva teaches spunbond multicomponent filaments and webs made from filaments wherein bicomponent filaments contains reclaim polymer. Mleziva teaches fine fiber filaments of less than 2 denier (col. 2, ln 20-25). Mleziva teaches a spunbond process of a first component and a second component where in the first component of polypropylene and the second polymer comprises reclaimed polymers including polypropylene (claims 4, 8 and 14).

Handbook of Fiber Chemistry, 3rd edition, Taylor and Francis, copyright 2006, chapter 3.6 and 3.7 details the melt spinning process for polypropylene fibers and the how it changes the polypropylene fiber properties of melt flow.

It would have been obvious to one of ordinary skill in the art to add the attenuation process and air permeable belt process of Geus to the process of Hills

motivated to improve the productivity of the spun bond manufacturing process. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use reclaim polypropylene motivated to use polymer scrap and waste as described by Mleziva. It would further of been obvious to one of ordinary skill in the art to use reclaim polypropylene and virgin polypropylene motivated by the understanding of how the melt spun process changes the polypropylene properties and can be reclaimed in the bicomponent fiber spunbond process described by Hills.

Terminal Disclaimer

The terminal disclaimer filed on 10/23/2007 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of PN US 6,737,009 has been reviewed and is accepted. The terminal disclaimer has been recorded.

(10) Response to Argument

A. The references do not teach or suggest all of the claim elements

Appellants argue that the combination of Hills, Geus et al. and Mleziva as set forth in the rejection does not result in the process defined by Appellants in the claims of record. Examiner would like to note that the 35 USC 103(a) rejection of Hills in view of Geus and Mleziva also included reference to the Handbook of Fiber Chemistry. Appellants argue that specifically, the references do not teach a process in which polypropylene (referred to as PP) is used in both components of sheath-core bicomponent filaments and wherein reclaimed polypropylene is located in the core of

the sheath core bicomponent filament. Appellants describe reclaim polypropylene in the specification as:

"*polypropylene that is recovered from previously spun polypropylene fiber or webs and that the reclaimed polypropylene will have been subjected to at least two heat histories in which the polypropylene has been melted and re-solidified. As a result, the reclaimed polypropylene exhibits a melt flow rate higher than that of virgin polypropylene, typically at least 5 melt flow units greater."* (pg. 8 and 9, lines 21-31 and 1-6)

Examiner provides reference to the Handbook of Fiber Chemistry to show that it is known in the art that the processing PP changes the properties of the PP and the changes to PP properties are known and predictable. While Appellants claim the novelty of the application is based on the ability to spin and process a fiber with reclaim PP in the core of a sheath core bicomponent fiber, a reclaim PP is in fact a PP with different melt characteristics than the virgin PP. Claim 1 does not exclude reclaim PP from being present in the sheath. Claim 1 recites the limitation that the "two or more PP polymer components, *at least* one component including reclaimed PP" and that the reclaim PP is present in the core in a range of up to 100% by weight which includes the range 0% to 100%. This limitation that the reclaimed PP in the filaments being 25% by weight or greater also does not exclude reclaim PP from being present in the sheath and the core. While claim 7, clearly claims that the reclaim PP is present at a 100% by weight, claim 7 does not exclude reclaim PP from being in the sheath.

The virgin PP disclosed in the specification is Exxon Resin PP 3155 with a known melt flow of 36. Therefore the reclaim PP might have a melt flow of greater than 36 and may be up to 5 melt flow units higher, based on the disclosure. The blend of reclaim PP and virgin PP would have a melt flow between the virgin melt flow of 36 and

up to 5 melt units higher. As disclosed, the current application is claiming a process for producing a spunbond nonwoven web comprising the steps of melting two or more PP polymer components. As disclosed the PP components can include reclaim PP which by Appellants disclosure is a PP with a higher melt flow. As the Office Action rejection to Hills in view of Gues, Mleziva and the Handbook of Fibers Chemistry is presented, it would have been obvious to produce a spunbond nonwoven web of polypropylene and reclaim polypropylene by the known materials and processes of Hills, Gues, Mleziva and the Handbood of Fibers Chemistry.

As Appellant argues that the disclosure of Mleziva would not lead to the combination in claim 1 nor claims 7, 10, 29 and 30, the 35 USC 103(a) rejection with respect to Hills in view of Gues and Mleziva and the Handbook of Fibers Chemistry is presented as findings that one of ordinary skill in the art could have combined the techniques and knowledge of spinning fibers and more specifically PP fibers with a reasonable expectation of success in producing a spunbond nonwoven fabric. Mleziva is relied upon for a teaching that it is known in the art to employ reclaim polypropylene in a bicomponent fiber spinning process. While Mleziva teaches more specifically the embodiments of polyethylene and polypropylene bicomponent fibers that crimp, Mleziva nevertheless teaches that up to about 20% of a polymer component can be reclaim polymer. About 20% could be 25% as recited in claim 1 and about 20% in each polymer component could be about 40% in the total filament and therefore Mleziva presents a finding that one of ordinary skill in the art could have employed reclaim polymer with a reasonable expectation of success.

Moreover, the arguments with respect to Mleziva are intended to specifically show why Mleziva does not teach the invention as claimed. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

As stated above, the Handbook of Fiber Chemistry teaches that PP fibers undergo a change in melt properties and more specifically molecular weight wherein melt flow rate is a recognized method of characterizing the properties of a polymer. As claimed the process for producing a spunbond nonwoven fabric comprising the steps of melting two or more PP polymer components, at least one component including reclaim PP is equated with melting two or more PP polymer components, at least one component of PP has a different properties than the other PP polymer components. The prior art of reference to Mleziva and Hills teach producing bicomponent fibers with two or more PP components as well as two or more polymer components. Therefore one of ordinary skill in the art could have combined the known materials and processes with a reasonable expectation of success in producing a spunbond nonwoven fabric. Further one of ordinary skill in the art could of substituted one polymer component for another and the results of the substitution would have been predictable.

B. There is no motivation to combine the references

Applicant argues that it is not obvious or evident that reclaimed polypropylene can be successfully incorporated into a spunbond process at this high level and the

prior art relied upon in the rejection provides no insight or direction to the person of ordinary skill on how to achieve these objectives. The references are drawn to processes of producing spunbond nonwovens produced from bicomponent fibers. As claimed, Appellant claims a process for producing a spunbond nonwoven fabric of two different PP polymers with different melt flows and Appellant discloses a series of process steps to achieve the production of this bicomponent fiber. Hills discloses the technique and process steps of spinning bicomponent fibers recited in Appellants claims and Hills also broadly discloses different polymer combination that can be spun and provides examples in Table I (col. 27 and 28). The broad range of polymer components and combinations would overlap the range of polymer materials and properties of the present invention. Hills discloses bicomponent fibers of two different PP and bicomponent fibers of two same PP. Hills process is very specific as to the spinning apparatus. Gues discloses a process for producing spunbond nonwovens that is designed with the principal object of the invention to provide an apparatus for the production of a spunbond web that can be used provide a wide range of products and is flexible to the products and materials which are processed. Gues's apparatus allows for operating conditions within the apparatus to be varied in a sufficiently wide range to accommodate a large variety of materials and for the production of a wide range of products without the limitations characterizing earlier spunbond production systems (Gues col. 2, lines 31-44). Gues details the ability to optimize and control the process and provides an apparatus that includes separate controls for the individual process steps and ability to vary conditions that are product dependent (Gues col. 3 and 4). As

Gues apparatus is more flexible to accommodate different products and a wide range of products, there is motivation to employ the process of Gues with the spinning technique and apparatus of Hills in order to produce a bicomponent PP fiber that has varying melt flow properties. While the varying melt flow properties are disclosed to be a result of the blending in reclaim PP, Hills and Gues teach a processes incorporating a broad range of bicomponent fibers and combinations which would inherently have different melt flow properties.

Appellants argue that there is no motivation to select the process of Gues. While Gues provides the motivation to employ an apparatus that has the ability to be fine-tune controlled for different products and materials, Gues provides a finding that one of ordinary skill in the art could of employed the apparatus of Gues with the spin packs of Hills with a reasonable expectation of success in producing a bicomponent fiber. With respect to Applicant's arguments that there is no suggestion of motivation to combine, the rationale to modify or combine the prior art does not have to be expressly stated in the prior art; the rationale may be expressly or impliedly contained in the prior art or it may be reasoned from knowledge generally available to one of ordinary skill in the art, established scientific principles, or legal precedent established by prior case law. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347,21 USPQ2d 1941 (Fed. Cir. 1992).

Appellants refer to the Nonwoven training course notes describing that there are a whole range of alternative systems and based on the number of choices available to the person of ordinary skill in the art. Appellants argue that in the absence of some

guidance or direction, a person of ordinary skill in the art would have no reason to favor the Gues system over the other available choices. However, as Gues and the other choices available as presented in the Nonwoven training course notes all teach that a spunbond filament and fabric can be produced by these methods, Gues presents a finding that one of reasonable skill in the art would have recognized that employing the known process of Gues would have yielded predictable results and that one of ordinary skill in the art could have modified the process of Hill with the process of Gues in view of the teaching of the technique for improvement in spunbond processing.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Elizabeth M. Cole/

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